Work Order ID 89383 Page 1 August-24-12 1:44:56 PM \*N900040100\* Item ID: D212-664-207 Accept **Revision ID:** Item Name: Crosstube Low Standard Aft **Start Date:** 8/24/12 Start Qty: 1.00 **Cust Item ID:** Req'd Qty: 1.00 Required Date: 9/14/12 **Customer:** Reference: Run Process Plan: MJ Date: 12 | 08 | 29 Tooling: Approvals: Stop Date: SPC (Y/N): Date: Reject Sequence ID/ Reject Insp. Operation Set Up/ Tool ID Tool # Plan Accept Qty Qty Code Number Stamp **Work Center ID** Description **Run Hours Revision Nbr** Draw Nbr D212-664-247 Rev B (DEO) 0.00 100 DOCUMENT CONTROL \*100\* DC 0.00 Memo Document Control Photocopy bluefile and create labels as per PPP D212-664-207 Pick Kit 0.00 110 12-9-18 Packaging \*110\* 0.00 Packaging Memo Packaging 0.00 120 BENDING MACHINE - CROSSTUBES \*120\* CNC Bend 2 0.00 Memo CNC Alpha 160 Bender Bend tube as per Dwg D212-664-247 using CNC bender program

		DQA:	Date:	
NCR: Yes / No	WORK ORDER NON-CONFORMANCE / UPDATE			

		_						QA Closed:	Date:			
Work Orde	er:		•		DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
					Rework	7 I		Skid-tube	Crosstube	]	Water Jet	Engineering
Part N	lo.				Scrap	7	ſ	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
			-		Use-as-is	7	Thern	noforming	Finishing	Rec/Sto	re/Packaging	Other
NCR N	lo				. Work Order Update	7		Large Fab	Composite		Supplier	
					•					-		
Root				Descri	iption of work order updaté	Ir	nitial	Ac	ction	Sign &		*
Cause	Date	Step	Qty		or Non-conformance	Chi	ief Eng	Desc	cription	Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling												1
Operator				ļ.		į						
Material												
Setup	_	١,					*					
Other				}							] `	
Process						-						1
Supplier								1				
Training												
Unapproved			<u>.</u>									
						FAULT	T CATE	GORY				
Landin	g Gear	٠			General					-		_
	Bending				Bend		Grain			Ovalized		Pressure/Forced
	Centre No	ot Conce	ntric to	o/s	BOM/Route		Hardwa	re ·		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged		Inspecti	ion Incomplete	· _	Part Incorre	ct	Weld
	Crushed/	Crimped.			Burrs		Instruct	ions Incomplete/	/Unclear	Part Lost/M	issing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte	nance		Part Moved		
	Heat Trea	it			Countersink		Mislabe	led	18.	Positioned V	Vrong	_
	Inspection	n Strip in	Tube		Cut Too Short		Misread	i t		Power Loss/	Surge	Other
	Ripples in	Bend			Drill Holes		Offset			-		
	Torque Waves in Extrusion				Drawing		Out of (	Calibration				
Γ	Turning Sequence				Finish		Out of S	Sequence				
Γ	Wave/Tw	ist in Tub	oe .		Folio		Outside	Dimensions				

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Work Ord August-24-12 1		9383		*893	383*						Page 2
Item ID: Revision ID:	D212-664-2	207		Accept	*N900	<u> </u>	100	<b>)*</b> s	Setup Start	1.77	S1*
Item Name:	Crosstube Lo	ow Standard Aft							Stop	*N.	S2*
Start Date: Required Date:	8/24/12 9/14/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item Customer						
Reference: Approvals:	Process P	lan:	Date:	Tooling:	I	Date:	-	F	Run Start	171	R1*
and the state of t	QC:		Date:	SPC (Y/N):	I	Oate:			Stop	*N	R2*
Sequence ID/ Work Center II	<b>D</b>	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130		QC15- Crosstube Dimer	sional Check	0.00							
*130* QC Quality Control		Memo		0.00	1, Nor118				<u> </u>		
140		_		0.00							
*140*		Crosstubes		0.00	_						
Crosstubes Crosstubes		Memo ********	ENSURE PROPER JIG	POSITIONING ******	***	TIL		17	- 9,	76	
				-664-247 using DT8972.**	<b>S</b>	IW		, 12	1 7	V.E.	•
			, -	D212 ((4 247 using DT)	)	1					

2-Drill pilot holes in tube as per Dwg D212-664-247 using DT8550 and DT8551

3-Ream hole to finish size in tube as per Dwg D212-664-247

4-\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\* Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-247

5-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-247

12-9-26

											DQA:	Date	:
NCR:	Yes	/ No				WORK ORDER NON-C	COI	NFORI	MANCE / UP	DATE			
									- · · · · · · · · · · · · · · · · · · ·		QA Closed:	Date	
Work Ord	ler·					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part NCR	No					Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update		Initial	Act	tion	Sign &		
Cause		Date	Step	Qty	(	or Non-conformance	Ch	nief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator													
Material	Ш												
Setup	Ш												
Other	Н												
Process	Н												
Supplier Training	H												
Unapproved	Н												
			1	L	l	F	AUL	T CATE	GORY		<u></u>	L	.1
Landi	ng G	ear				General						**	
		Bending				Bend		Grain			Ovalized	Γ	Pressure/Forced
	П	Centre No	t Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
	П	Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct	Weld
		Crushed/0	Crimped.			Burrs		Instruct	ions Incomplete/l	Jnclear	Part Lost/Mi	ssing	Wrong Stock Pulled
		Cuffs				Contamination		Mainte	nance		Part Moved	-	_
	Heat Treat					Countersink		Mislabe	led		Positioned V	Vrong	
	Inspection Strip in Tube					Cut Too Short		Misread	ł		Power Loss/	Surge	Other
	Ripples in Bend					Drill Holes		Offset		<del></del>			
	Torque Waves in Extrusion					Drawing		Out of 0	Calibration				
	ר 🔲	Turning S	equence			Finish		Out of S	Sequence				
	$\square$	Nave/Tw	ist in Tub	e		Folio		Outside	Dimensions				

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Work Order ID 89383

\*89383\*

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August-24-12 1:44:56 PM Item ID: D212-664-207 Accept \*N900040100\* Setup Start **Revision ID:** Crosstube Low Standard Aft Item Name: 8/24/12 Start Qty: 1.00 Start Date: **Cust Item ID:** Required Date: 9/14/12 Req'd Qty: 1.00 **Customer:** Reference: Run Process Plan: Date: Tooling: **Approvals:** Date: Stop QC: Date: SPC(Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject Insp. Work Center ID Description **Run Hours** Code Otv Otv Number Stamp 150 QC5- Inspect part completeness to step on W/O 0.00 \*150\* 0.00 Memo Quality Control \*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\* 0.00 160 H 12-9-27 \*160\* HandFXtube 0.00 Memo \*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\* Hand Finishing Crosstubes 1- CLEAN CROSSTUBE WITH WASH'N WIPE Outsource process - NDT per OSI038 4.1 0.00 180 CL 12/09/27 (1) \*120\* Outsource2 0.00 Memo \*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\* Outsource process - NDT

> Liquid Penetrant Inspection as per QSI 038 Issue P/O: LSO LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order

NCR:	Yes /	No				WORK ORDER NON-	COI	NFORM	MANCE / UPI	DATE			4
											QA Closed:	Date:	*
Work Ord	er:				, , , , , , , , , , , , , , , , , , , ,	DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part I	No					Rework Scrap Use-as-is Work Order Update		ļ	Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root		Ĭ			Descri	ption of work order update	T	Initial	Act	ion	Sign &		
Cause	1	ate	Step	Qty	(	or Non-conformance	Ch	ief Eng	Descr	iption	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved													
						F	AUL	T CATE	GORY				
Landi	ng Gear					General					1		1
	Cen		t Concer	ntric to (	o/s	Bend BOM/Route		Grain Hardwa			Ovalized Over/Under	<del></del>	Pressure/Forced Temperature/Cure
	Cra				-	Broken/Damaged	-		on Incomplete		Part Incorred	<del>-</del>	Weld
	Cru		rimped,		-	Burrs	$\vdash$	1	ions Incomplete/U	<del> </del>	Part Lost/Mi	ssing	Wrong Stock Pulled
	<del></del>				<del> </del>	Contamination Countersink	$\vdash$	Mainte Mislabe		ļ	Part Moved Positioned V	Vrong	
	Heat Treat Inspection Strip in Tube			Tuhe	ļ	Cut Too Short	$\vdash$	Misread			Positioned v		Other
	Ripples in Bend			TUDE		Drill Holes	-	Offset		L	J. OWEL LUSS/.	Juige	Other
	Torque Waves in Extrusion				, ├─	Drawing	-	4	Calibration		<del></del>		
	Turning Sequence				·  -	Finish	<u> </u>	i	equence				

Outside Dimensions

Date:

Wave/Twist in Tube

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Order ID 89383 Page 4 August-24-12 1:44:56 PM Item ID: D212-664-207 Accept Setup Start \*N900040100\* **Revision ID:** Crosstube Low Standard Aft Item Name: 8/24/12 Start Qty: 1.00 **Start Date: Cust Item ID:** Required Date: 9/14/12 **Req'd Qty:** 1.00 **Customer:** Reference: Run Process Plan: Date: **Tooling:** Date: **Approvals:** Stop QC: Date: SPC (Y/N): Date: Reject Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Insp. Qty Number Stamp Work Center ID **Description Run Hours** Code Qty . Receive & Inspect for Damage & Mat'l Certs 0.00 190 Packaging \*100\* 0.00 Packaging Memo Packaging \*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\* Ensure copy of NDT results attached to work order. QC5- Inspect part completeness to step on W/O 200 0.00 \*200\*

204

Crosstubes Chemical Conversion

Memo

0.00

Al 12-9-27

0.00

\*204\*
HandFXtube

Quality Control

FXtube Memo

0.00

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

Inspect for damage & ensure results are as per Dwg D212-664-207

Hand Finishing Crosstubes

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE AND CUFF BEFORE CHEMICAL CONVERSION

NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE													15
											QA Closed:	Date:	• •
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part 1						Rework Scrap Use-as-is			Skid-tube Machining noforming	Crosstube Small Fab Finishing	4	Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other
NCR I	No.			<del></del>	<del></del>	Work Order Update	]	mem	Large Fab	Composite	Rec/sto	Supplier	Other
Root					Descri	ption of work order update		Initial	Act	ion	Sign &		
Cause		Date	Step	Qty	(	or Non-conformance	Ch	nief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved													
							AUL	T CATE	GORY			<del></del>	
Landi						General		1		_	1	<del></del>	<b>.</b>
		Gear  Bending  Centre Not Concentric to O/S  Cracks  Crushed/Crimped.				Bend BOM/Route Broken/Damaged Burrs		1	re on Incomplete ions Incomplete/U	Jnclear	Ovalized Over/Under Part Incorre Part Lost/Mi	ct	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled
		Cuffs				Contamination		Mainte	nance		Part Moved		
		Heat Treat				Countersink		] Mislabe	led		Positioned V	Vrong	_
		Inspection Strip in Tube				Cut Too Short		Misread	I		Power Loss/	Surge	Other
		Ripples in Bend				Drill Holes		Offset					
		Torque Waves in Extrusion				Drawing		Out of 0	Calibration				
	-7	Turning Sequence				Finish		Out of 9	Sequence				

Outside Dimensions

DQA:

Date:

Wave/Twist in Tube

Folio

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Work Ord August-24-12 1		9383		*893	8.3*						Page 5
Item ID: Revision ID:	D212-664-	207		Accept	*N900	<b>040</b>	100	)* 9	Setup Sta	1 /1	S1*
Item Name:	Crosstube Lo	ow Standard Aft		•					Sto	<sup>p</sup> *N	S2*
Start Date:	8/24/12	Start Qty: 1.00	*1*		Cust Item I	D:					
Required Date:	9/14/12	Req'd Qty: 1.00	*1*		Customer:			T	) Sto	wt	
Approvals:	Process P	lan:	Date:	Tooling:	D:	ate:		1	Run Sta	17	R1*
	QC:				Da	ate:			Sto	*N	R2*
Sequence ID/ Work Center II	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
206		QC7-Inspect Chemical C	Conversion Coat	0.00 <b>DA</b> C							
*206*		Memo		0.00	रीकार्य			******			
Quality Control		*** WEAR	LATEX GLOVES WHEN	HANDLING CROSSTUB	E***						
210				0.00				40			
*210*		Crosstubes						Ag	12.	- 9-5	₹
Crosstubes		Memo		0.00							

1-Rivet and assemble Cuffs with T-Pin in the through bolt holes as per Dwg D212-664-247, with Sika flex in Between tube & Cuff

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

Crosstubes

A/R SIKAFLEX -241/-291 BATCH: 122443

NCR:	Yes / No			•	WORK ORDER NON-	CO	NFOR	MANCE / UPI	DATE			
		•					•			QA Closed:	Date:	` .
Work Orde	er:				DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
					Rework	7		Skid-tube	Crosstube	] .	Water Jet	Engineering
Part N	No			-	Scrap			Machining	Small Fab	4	d. Eng. Coor.	Quality
, NCR N	No				Use-as-is Work Order Update		Thern	noforming Large Fab	Finishing Composite	Rec/Sto	re/Packaging Supplier	Other
Root				Descri	ption of work order update	Τ	Initial	Act	ion	Sign &		
Cause	Date	Step	Qty	,	or Non-conformance Chief E			. Descr	ription	Date	Verification	QC Inspector
Doc/Data		1			•							·
Equip/Tooling					•	•		<u>.</u>				
Operator		1									•	
Material		1										,
Setup		1										
Other					•				*			
Process						1						1
Supplier			:					·				
Training								1				,
Unapproved		İ <u>-</u> .		۷.								<del>!</del> ^
					······································	AU	LT CATE	GORY				
Landir	ng Gear				General	_	٦	_		1		٦. ،
	Bending	_			Bend	_	Grain	•	- ·  -	Ovalized		Pressure/Forced
	Centre No	ot Concer	ntric to (	o/s	BOM/Route	$\vdash$	Hardwa		· .	Over/Under		Temperature/Cure
İ	Cracks				Broken/Damaged	-	-4	on Incomplete		Part Incorre		Weld
ì	Crushed/	Crimped.		· ·	Burrs *	$\vdash$	-	ions Incomplete/L	Jnclear	Part Lost/M	issing	Wrong Stock Pulled
	<b>├</b> ── <b>┤</b>				Contamination	-	Mainte		<u> </u>	Part Moved		
·	. Heat Treat			-	Countersink	$\vdash$	Mislabe		·	Positioned V		٦٠٠٠
Inspection Strip in Tube				<u> </u>	Cut Too Short	-	Misread	I	1	Power Loss/	Surge	Other
}	Ripples in			-	Drill Holes	_	Offset					
	Torque W			`  _	Drawing	_	-	Calibration				
	Turning S			<u> </u>	Finish	$\vdash$	-1	equence				
1	Wave/Tw	ist in Tub	oe e		Folio		Outside	Dimensions				

Date:

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andard Aft		Accept	*N900	()4()	1()(	)* s	etup Star Sto	ומטו
tart Qty: 1.00	*1* *1*		Cust Item I	ID:				
		<del>-</del>				R	Run Star Sto	"NRT"
		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Insp. Number Stamp
	teness to step on W/O	0.00				\		05 12 09 29
*** WEAR L			***					
oray Painting per QSI00 orayPaint <b>Memo</b>	5 4.2	0.00  0.00  HANDLING CROSSTURE*	**	•				05 la 01 é
1-Prime insid	e and outside crosstube a	s per QSI 005 4.2	**			~ •		
	Peration escription C5- Inspect part comple  Memo *** WEAR L  ***Inspect cu pray Painting per QSI00 prayPaint  Memo  *** WEAR L  1-Prime insid	Date: Date:	Date: Tooling: Date: SPC (Y/N):  Date: SPC (Y/N):  Deparation Set Up/ Run Hours  C5- Inspect part completeness to step on W/O  Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*  ***Inspect cuff with T-Pin***  Dray Painting per QS1005 4.2   Cust Item Req'd Qty: 1.00 *1* Req'd Qty: 1.00 *1*  Date: Tooling: D Date: SPC (Y/N): D  Peration Set Up/ Tool ID  Run Hours  C5- Inspect part completeness to step on W/O 0.00  Memo 0.00  *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  ***Inspect cuff with T-Pin***  Pray Painting per QSI005 4.2 0.00  PrayPaint 0.00  *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  1-Prime inside and outside crosstube as per QSI 005 4.2	Cust Item ID: Req'd Qty: 1.00 *1*  Date: Tooling: Date:  Date: SPC (Y/N): Date:  Peration Set Up/ Run Hours  C5- Inspect part completeness to step on W/O 0.00  Memo 0.00  *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  ***Inspect cuff with T-Pin***  Pray Painting per QSI005 4.2 0.00  Memo 0.00  *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  1-Prime inside and outside crosstube as per QSI 005 4.2	Cust Item ID:  Req'd Qty: 1.00 *1 * 1 *  Req'd Qty: 1.00 *1 *  Date: Tooling: Date: Date: Date: Tool ID Tool # Plan Excription Run Hours Code  C5- Inspect part completeness to step on W/O 0.00  Memo 0.00  *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  ***Inspect cuff with T-Pin***  Memo 0.00  *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***    Date:	Cust Item ID: Req'd Qty: 1.00 *1*  Date: Tooling: Date: Date: Date: Date: Tool ID Tool # Plan Accept Plan Accept Code Qty  C5- Inspect part completeness to step on W/O 0.00  Memo 0.00  *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  ***Inspect cuff with T-Pin***  Memo 0.00  *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  ***Inspect cuff with T-Pin***  Memo 0.00  **** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  1-Prime inside and outside crosstube as per QSI 005 4.2  2-Paint outside crosstube with White Imron as per QSI 005 4.2	Accept Reject Plan Dete:  Date: Tooling: Date: Sto  Date: SPC (Y/N): Date:  Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  Date: SPC (Y/N): Date: Sto  D	

PAINT: Start Time: 1000 Finish Time: 2000

											DQA	Da	ite:	
NCR:	Yes	/ No				WORK ORDER NON-O	100	NFORI	MANCE / UP	DATE				
											QA Closed	Da	ite:	
Work Ord	er:		,			DISPOSITION				AGAINST DE	PARTMENT	/PROCESS		
. Part						Rework Scrap		ı	Skid-tube Machining	Crosstube Small Fab	4	Water Jet		Engineering Quality Other
NCR	No.					Use-as-is Work Order Update			noforming Large Fab	Finishing Composite	Rec/Std	re/Packaging Supplier		Other
Root					Descri	ption of work order update		nitial	Ac	tion	Sign &			
Cause		Date	Step	Qty	C	or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verificatio	n	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup		Step day												
Other Process														
Supplier Training											:			
Unapproved						· · · · · · · · · · · · · · · · · · ·	<u> </u>				<u> </u>	<u> </u>		
							AUL	T CATE	GORY					
Landi	<u> </u>					<b>General</b> Bend		Grain		<u></u>	Ovalized			Pressure/Forced
	-	Bending Centre No	t Concer	itric to (	o/s	BOM/Route		Hardwa	re		Over/Unde	tolerance	$\vdash$	Temperature/Cure
	Cracks					Broken/Damaged		Inspecti	on incomplete		Part Incorre			Weld
Crushed/Crimped.						Burrs			ions Incomplete/	Unclear	Part Lost/N			Wrong Stock Pulled
	Cuffs					Contamination		Mainte			Part Moved	-	_	, -
	Heat Treat					Countersink		Mislabe		ļ	Positioned			
		Inspection	Strip in	Tube		Cut Too Short		Misread			Power Loss	_		Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Orde		9383		*892	383*							Page 7
Item ID: Revision ID:	D212-664-	207		Accept	*N900	<b>040</b>	100	<b>)*</b>	Setup	Start	I V	S1*
Item Name:	Crosstube L	ow Standard Aft								Stop	*N	S2*
Start Date: Required Date: Reference:	8/24/12 9/14/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item I Customer:	D:						
Approvals:	Process P	lan:	Date:	Tooling:	Di	 ate:	-	F	Run	Start	*N	R1*
				_		ate:				Stop	*N	R2*
Sequence ID/ Work Center II	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool#	Plan Code	Accept Qty	Rejo Qty		Reject Number	Insp. Stamp
230		QC14- Inspect Spray Pai	nt	0.00						$\overline{}$		
*230*		Memo		0.00				0_	É	<b>≯</b> /	2.10.	01
Quality Control			stic bag to protect from sc	ratches								
240				0.00								64.

\*740\* Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1- Assemble as per Dwg D212-664-247

 $1\hbox{-}Abrade$  mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe

2-Install supports with Proseal 890 per DSI9563 and QSI 015 A/R Proseal 890 Batch: 123 103

3- Torque bolts as per dwg

											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-	CO	NFOR	MANCE / UP	DATE	QA Closed:	 Date:	
						DISPOSITION				AGAINST DE	EPARTMENT		
Work Ord	er: .					Davierti	7		Skid-tube	Crosstube	7	Water Jet	Engineering
Part	No.				<del></del>	Rework Scrap Use-as-is		1	Machining noforming	Small Fab Finishing		d. Eng. Coor.	Quality Other
NCR	No.				<del></del>	Work Order Update			Large Fab	Composite	1 1100	Supplier	
Root				-	Descri	ption of work order update		Initial	Act	ion	Sign &		·
Cause		Date	Step	Qty	C	or Non-conformance	Cł	nief Eng	Descr	iption	Date	Verification	QC Inspector
Doc/Data	Ш												
Equip/Tooling	Ш												
Operator	Ш												•
Material	Ы												
Setup	Н												
Other	Н												
Process	Н						ŀ						
Supplier Training	Н												
Unapproved	H											İ	
Onapproved	ш					<u> </u>	-LL FAUI	LT CATE	GORY		1	1	
Landi	ng G	iear				General							
,	П	Bending				Bend		Grain			Ovalized		Pressure/Forced
		Centre No	t Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
		Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct	Weld
		Crushed/Crimped.				Burrs		Instruct	ions Incomplete/L	Inclear	Part Lost/M	issing	Wrong Stock Pulled
	Cuffs					Contamination		Mainte	nance		Part Moved		_
	Heat Treat					Countersink		Mislabe	led		Positioned V	Vrong	_
	Inspection Strip in Tube					Cut Too Short		Misread	•		Power Loss/	'Surge	Other
		Ripples in	Bend			Drill Holes		Offset					
		Torque W	aves in E	xtrusio	ı [	Drawing		Out of C	alibration				

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Finish

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Orde			383		*89	383*							Page	8
Item ID: Revision ID: Item Name:	D212-6		v Standard Aft		Accept	*N900	<b>040</b>	100	)*	Setup	Start Stop	I VI	S1* S2*	
	8/24/12		Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item I Customer:	D:						. 12	
Approvals:	Proces QC:		n:		Tooling: SPC (Y/N):		ate:			Run	Start Stop	171	R1* R2*	
Sequence ID/ Work Center II 250 *250* QC Quality Control	D	:	Operation Description QC5- Inspect part compl	leteness to step on W/O	Set Up/ Run Hours 0.00 A		Tool#	Plan Code	Accep Qty	t Re Qt	•	Reject Number	Insp. Stamp	7
*755* Packaging Packaging			Pick Kit  Memo		0.00					4	] [4] [6]	120		-
<sup>260</sup> *260*			QC4- 100% Inspect kits	for completeness	0.00	is allow								

0.00

Memo

Quality Control

NCR:	Yes	/ No				WORK ORDER NON-	CON	FOR	MANCE / UF	PDATE	04.61-	. اد د د	Data	``	٠.
						I					QA Clo	sea:	Date:		
Work Ord	er.					DISPOSITION				AGAINST D	EPARTIV	IENT,	/PROCESS		
Part I	- No					Rework Scrap Use-as-is Work Order Update			Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	Rec		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineeri Qual Oth	ity
Doot			Ι	[	Dogori	ntion of work order undete		nitial	Ι	ction	Cian	0.		1	
Root Cause		Date	Step	Qty		ption of work order update or Non-conformance	i	ef Eng		cription	Sign Dat		Verification	QC Insp	ector
Doc/Data	П	Dute	Step	Ψ.,		Tron comormance		er eng		en peron	1 24		V C I I I C C C C C C C C C C C C C C C	<u> </u>	
Equip/Tooling															
Operator															
Material															
Setup	Ш														
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Process	Ш						1								
Supplier	Н														
Training	Н						1				-				
Unapproved	Ш			,			<u> </u>	CATE	CORY						
Landi	nø G	ear				r General	AULI	CATE	GURT						·
Bending						Bend	П	Grain		F	Ovalize			Pressure/Fo	
	l k	Centre No	t Concer	itric to C	o/s	BOM/Route	1 1	Hardwa	re		Over/U	Inder	tolerance	Temperatur	e/Cure

Inspection Incomplete

Maintenance

Out of Calibration.

Out of Sequence

Outside Dimensions

Mislabeled

Misread

Offset

Instructions Incomplete/Unclear

Broken/Damaged

Contamination Countersink

Cut Too Short

Drill Holes

Drawing

Finish

Folio

Burrs

DQA:

Part Incorrect

Part Moved

Part Lost/Missing

Positioned Wrong

Power Loss/Surge

Date:

Weld

Other

Wrong Stock Pulled

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Cracks

Cuffs

Heat Treat

Crushed/Crimped.

Inspection Strip in Tube

Torque Waves in Extrusion

Work Ord August-24-12						Page 9						
Item ID: Revision ID:	D212-664-	-207		Accept	*N900	<b>040</b>	100	)*	Setup	o Start	*N	S1*
Item Name:	Crosstube L	ow Standard Aft								Stop	*N	S2*
Start Date: Required Date	8/24/12	Start Qty: 1.00 Req'd Qty: 1.00	*1*		Cust Item I	D:						
Reference:	<b>e.</b> 9/14/12	<b>Req a Qiy.</b> 1.00	*1*		Customer:							
Approvals:	Process P	Plan:	Date:	Tooling:	D:	ate:			Run	Start Stop	" \	R1*
	QC:		Date:	SPC (Y/N):	Da	ate:				Stop	*N	R2*
Sequence ID/ Work Center	ID	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	t R	eject ty	Reject Number	Insp. Stamp
*270		Packaging		0.00	103						/.	alional
Packaging Packaging		Memo Identify an	d pack for shipping as pe	0.00 r PPP D212-664-207	·							,
												_
<sup>280</sup> *280*		QC21- Final Inspection	- Work Order Release	0.00						12	101	/ JA
QC Quality Control		Memo		0.00						10_	11	

W 1 22 90.11



# WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \[ Date: \( \frac{12\llo(22\)}{\llo(22\)} \]

									*****		QA Closed.	Date	[2] 19 ==	
Work Ord	er:	49	38	<u>ر</u>			DISPOSITION				AGAINST D	EPARTMENT,	/PROCESS	
	- <del> </del>		<del></del>			:	Rework	11		Skid-tube	Crosstube		Water Jet	Engineering
Part I	Vo.	1-, Th	Polos	-205	7		Scrap 7	1	ľ	Machining X	Small Fab	Pro	d. Eng. Coor.	Quality
		<u> </u>	$\frac{\sqrt{2}}{\sqrt{2}}$	. 0-0	<u>;                                    </u>		Use-as-is	1 1		noforming	Finishing		re/Packaging	Other
NCR f	No.	17 -	- 191	(			Work Order Update	1 1		Large Fab	Composite	1	Supplier	
	· · ·	10	1 4	<u> </u>			Work Order Opadie	, I	.'		und & CROS	سا خطر المورر	oappiie.	_
Root	- 3				Descri	ntion o	of work order update.	l Ir	nitial	·	tion	Sign &		
Cause	Di	ate	Step	Qty	· · · · · · · · · · · · · · · · · · ·		-conformance		ef Eng	1	ription	Date	Verification	QC Inspector
Doc/Data		+	эсер	Qty								Dute		-
Equip/Tooling	$\vdash$	towns when transportable						``			stroy,	TW	016 16	0AS 16 1-5
	X				machined	cuf.	1 3360-1	\		D3660-1) ]	P 76983.	1-	16	16
Operator		1 1. I by take that the							1042	23660	87445	12-9-21	4. 9-4"	9-50
Material	was too shurt							1 .		+ Repla B	81445		Moli2	052642
Setup	\ \bar{v}	3414						12	orlei			1000	,	•
Other					Ding 0	.43 છ	1) mearcis 0.418".			inspect hat	AND Pour	1/2/2	<u>~</u> ,\	12/03/81
Process					•			1		all part 1.	AND found	W (0) 4 39	12.9.21	
Supplier									2	1 1377 ~	we com	ا عا دا .	12-9-21	
Training								5	3	<i> </i>		12/09/21		
Unapproved							/ #M	1	i	1/				
							/ F/	AULT	CATE	GORY				
Landiı	ng Gear						General		<del>/</del> 5					
	Bend	ding				Bend		$\square$	Grain. ·	.s.,	: ,	Ovalized		Pressure/Forced
	Cent	re Not	Concen	tric to (	o/s	вом	/Route	П	Hardwa	ire		Over/Under	tolerance	Temperature/Cure
	Crac	ks				Broke	n/Damaged	-	* * *	ion Incomplete		Part Incorred	ct 📙	Weld
	Crus	hed/Cr	imped.			Burrs	,			ions Incomplete/	Unclear	Part Lost/Mi	ssing	Wrong Stock Pulled
	Cuffs					1	mination		Mainte	•		Part Moved		
ŀ						4	tersink	-	Mislabe		<del> </del>	Positioned V	Vrong :	
ŀ	Inspection Strip in Tube Cut Too Sho						-	Misread		<u> </u>	Power Loss/	_	Other	
ŀ	Ripples in Bend Drill Holes						-	Offset	<b>^</b>	<u>L</u>	<b></b>	<u></u>	@ HAAS +	
}						Draw		-		Calibration				E on wlo
					i	iiig	$\vdash$					is the ac	-0 ON MO.	
Turning Sequence					<b>−</b>		-		Sequence		T6983			
	Wave/Twist in Tube					Folio			Jutside	Dimensions				

August-24-12 1:44:56 PM

Work Order ID:

89383

Parent Item:

D212-664-207

Parent Item Name:

Crosstube Low Standard Aft

**Start Date:** 8/24/12

Required Date: 9/14/12

Start Qty: 1.00

Required Qty: 1.00

**Comments:** 

IPP Rev:A New Issue 07.09.12 EC verified by: JLM

IPP Rev:B ECN 1100p 08-01-11 DD verified by: EC IPP Rev:C ECN 1121 08-02-25 DD verified by:eC

IPP Rev: D QC5 replaced by QC15 at step 5 KJ Verified by: ec

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on e Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D212-664-207TRNRevA Crosstube Turning Detail		Manufactured	No	89	854	110 🛰 •		0.0000	1		Ĭ	MO	12-9-19
<b>D3660-1</b> CUFF	* ************************************	Manufactured	No			140	Each	20.0000	2	2			
				Location		Loc Qty	<u>I</u>	oc Code					
				LG 803	359	2 2			-				
		,		ST477	145	10 10			(2		Ju	ノ	12-9-21
				ST482	501	8							
				535 (769 883	983	1					IW		12-9-21
CR3212-4-06 CHERRY RIVET		Purchased	No	002	,,,,	220	Each	796.0000	44	44	AS	12.	-9-28
				Location		Loc Qty	<u>1</u>	oc Code					
				ST329	2378	503 503				14)			
				ST330		240							
					)521 2141	40 200							
				SŢ331		53							
					2492 2794	18 8							
					2794 9717	27			<del></del>				

											DQA:	Date	e:			
NCR:	Yes	/ No			÷	WORK ORDER NON-	COI	NFORI	MANCE / UPDATE		QA Closed:	Date	e:			
Manla Ond						DISPOSITION			AC	GAINST DE	PARTMENT					
Work Ord	_			-		Rework	]		<b>⊢</b>	sstube		Water Jet	Engineering			
Part	No. –					Scrap	-	1	<b>Ŭ</b>	nall Fab		d. Eng. Coor. e/Packaging	Quality Other			
NCR I	No				<del></del>	Use-as-is Work Order Update	}	mern	~ <b>—</b>	nishing nposite	posite Supplier Supplier					
Root					Descri	ption of work order update		Initial	Action		Sign &					
Cause		Date	Step	Qty		or Non-conformance	Cr	nief Eng	Description		Date	Verification	QC Inspector			
Doc/Data	Ш															
Equip/Tooling																
Operator	Ш															
Material	Ш															
Setup	Щ															
Other	Ш															
Process	Ц															
Supplier	Ш															
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Unapproved							<u> </u>									
				_			AUL	T CATE	GORY							
Landi					<u> </u>	General		1			l	Γ-	——————————————————————————————————————			
	_	Bending			<b>)</b> ——	Bend	<u> </u>	Grain		<u> </u>	Ovalized	. <b>-</b>	Pressure/Forced			
	_	Centre No	t Concer	itric to	O/S	BOM/Route	<u> </u>	Hardwa			Over/Under	-	Temperature/Cure			
	_	Cracks			-	Broken/Damaged	$\vdash$	4 '	on Incomplete	.	Part Incorred	<del>-</del>	Weld			
	-	Crushed/C	rimped.			Burrs	<u> </u>	1	ions Incomplete/Unclear	·	Part Lost/Mi	ssing [	Wrong Stock Pulle			
:	$\boldsymbol{\vdash}$	Cuffs	_			Contamination	<b>—</b>	Mainte		ļ	Part Moved					
		leat Treat	t	Countersink   Mislabeled							Positioned W	/rong				

Misread

Out of Calibration

Out of Sequence Outside Dimensions

Offset

Other

Power Loss/Surge

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Inspection Strip in Tube

Torque Waves in Extrusion

Cut Too Short

Drill Holes

Drawing

Finish

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

August-24-12 1:44:56 PM

Work Order ID:	89383											
Parent Item:	D212-664-207						Start l	Date: 8/24/12		Required Dat	e: 9/14/12	
Parent Item Name:	Crosstube Low Sta	ndard Aft					Start	<b>Qty:</b> 1.00		Required Qt	y: 1.00	
<b>D3595-063-530</b> RUBBER CUSHION		Manufactured	No		240	Each	162.0000	4	4	0AS 05	12 10	0)
				Location	Loc Qty		Loc Code					
				LG	50							
				79932	13							
				82656	37							
				LG051	73							
				87833	73							
				MAT052	39							
				63407	6							
				67185	6							
				70067	18							
				72745	2							
				75783	7					AS	;	
D2940-1 Support		Manufactured	No		240	Each	23.0000	2	2	( )	\$ 1210	0)
				Location	Loc Qty		Loc Code					
				LG052	23							
				79118	2							
				82657	1							
				87921	20					( DS		
MS21920-28 Clamp(per MIL-DTL-878	33C)	Purchased	No		240	Each	78.0000	4	4	O S	, 12 10	0)
				Location	Loc Qty		Loc Code			1000		
				FG	5							
	ŋ,			105884	5							
	B# 12	37838		LG050	55							
				118713	3							
				120054	2							
				122518	50							
				LG051	18			***				
				121440	8							
				122204	10							

					•					DQA:	Date	<b>;</b>
NCR:	Yes / No				WORK ORDER NON-O	COI	NFORI	MANCE / UPE	DATE	QA Closed:	Date	
	.,				<u> </u>		<u> </u>			·		·
Work Ord	er:				DISPOSITION				AGAINST DE	PARTMENT,	/PROCESS	
Part I	•	<u>,                                     </u>			Rework Scrap Use-as-is Work Order Update			Skid-tube  Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Descri	ption of work order update		Initial	Acti	ion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Ch	nief Eng	Descri	iption	Date	Verification	QC Inspector
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Landi	ng Gear				General		_					
	Bending				Bend		Grain		[	Ovalized	Ĺ	Pressure/Forced
	Centre N	ot Concer	ntric to	o/s	BOM/Route	L	Hardwa	re		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorred	it	Weld
j	Crushed	/Crimped.			Burrs		Instruct	ions Incomplete/U	nclear	Part Lost/Mi	ssing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte	nance		Part Moved		
	Heat Treat Countersink Mislabeled Positioned Wrong						<b>Vrong</b>					

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Cut Too Short

Drill Holes

Drawing

Finish

Folio

Power Loss/Surge

Other

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Inspection Strip in Tube

Torque Waves in Extrusion

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Order ID: Parent Item: Parent Item Name:	89383 D212-664-207 Crosstube Low Star	dard Aft						Date: 8/24/12 Qty: 1.00	Required Date: 9/14/12 Required Qty: 1.00
D3428-1		Manufactured	No		255	Each	13.0000	1	19090
Placard		Manaracturea					·		1 90998
)				Location	Loc Oty		Loc Code		
				ST042	13				_
				83582	1				<del>_</del>
				85228	12				
MS21042L6		Purchased	No		255	Each	869.0000	6	6
Nut								Contract in Engage of Contract	
	*			Location	Loc Qty		Loc Code		
				314	578				_
				122441	578			M/229	14/
				ST300	291				
				117677	25				_
				118384	3				
				118927	48				_
				119075	15 200				- 4
ANOCOIDCIC	NIA C1140D04421		NI-	120308		D1-	0.0000	10	-
AN960JD616	NAS1149D0663J	Purchased	No		255	Each	0.0000	18	18 M/2302/
Washer  AN6-41A		<b>.</b>	No		255	Each	89.0000	2	
Bolt		Purchased	NO		233	Each	89.0000	2	2 / / / / /
Boll				<b>*</b>			L. C. I.		
				Location	Loc Qty		Loc Code		
				ST340	50				_
				122407	50				_
				ST342	39				_
		v.		120423 121825	9 30			1216	To 21 >
				121023	30			10.10	= P/ ->

NCR:	Yes	/	No

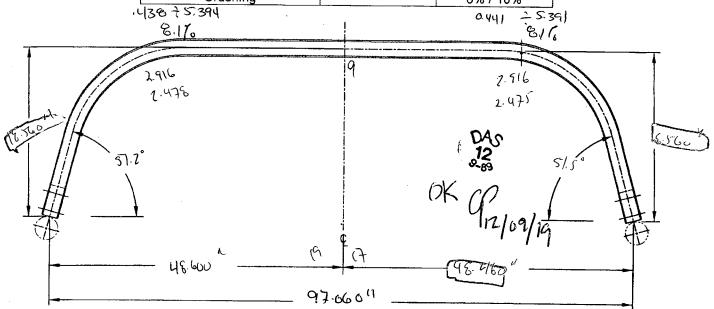
## WORK ORDER NON-CONFORMANCE / UPDATE

2 A		•	
H			•
DQA: XXXX	1 , Date:		
AT	1211011	7	
<i>i</i>	/ ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	١,	

										QA Closed:	C Date	:12/10/17		
Work Ord	er:	Sc	138:	3			DISPOSITION		~		AGAINST DE	PARTMENT	/PROCESS ,	
Part I	No. No.	D212			07	Wo	Rework Scrap Use-as-is rk Order Update			Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root Cause		Date	Step	Qty	1	•	ork order update nformance	ı	nitial ief Eng		tion ription	Sign & Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup		, d/d0	, didd of Pab				Fom Kil	<b>\(\cdrt{\chi}\)</b>	Bisol87 Or xy  astor  Tholat update Bon + Wa			13/10/4 50 2	17(10)c4	15/2012 12/10/04
Other Process Supplier Training Unapproved								(7	(6)	erpare 00	m + Wo	17.10.13		12/10/04
			- '				F	AUL	T CATE	GORY				
Landi	ng (	Gear				_ (	General					_		_
		Bending Centre No Cracks	ot Concer	ntric to	o/s	Bend BOM/Rou Broken/D			Grain Hardwa			Ovalized Over/Under Part Incorre	<del> </del>	Pressure/Forced Temperature/Cure Weld
		Crushed/0	Crimped.			Burrs	<u> </u>		Instruct	on Incomplete ions Incomplete/	Unclear	Part Lost/Mi	<del>) -</del>	Wrong Stock Pulled
		Cuffs Heat Treat				Counters Counters		$\vdash$	Mainte Mislabe		-	Part Moved Positioned V	Mrong	
	Inspection Strip in Tube					Cut Too Sh			Misread		<u> </u>	Power Loss/		Other
	Ripples in Bend					Drill Hole			Offset		L	_ · · · ·	- L	1
	Torque Waves in Extrusion					Drawing			Out of C	Calibration				
	Turning Sequence					Finish		Ou		Sequence				
	Wave/Twist in Tube							Outside Dimensions						

DART AEROSPACE LTD	Work Order:	29383
Description: Crosstube Low Aft (205/212)	Part Number:	D212-664-207
Inspection Dwg: D212-664-247 Rev: B		Page 1 of 1

Required Dimension	Min	Max
Height	18.16	18.42
1/2 Span	48.55	48.81
Angle	49	52
Total Span	97.1	97.62
Bending Passes	8	
Crushing		6% / 10%



	Side	A middle.	Side B
Bending Pass	es (9	9	17
Crushing	6,	170	8.1%
	Com	ments	
SiR AZ 8.	18 crushing	( 18 PA	2360
minolez 9	PASKS		
Sine B2 8	5.1% crush,	( 17 DA	Mes.
Sine B2 8	0.17. crush;	W 17 PA	sses.

QC15 Inspection	
<b>P</b> .	DACIO
Date	16 12/07/18

Rev	Date	Change	Revised by	Approved
Α	08.02.29	New Issue	KJ/JM	
В	10.04.01	Dwg Rev updated	KJ . A	
С	12.04.16	Added bending, crushing dimensions	KJ 🚓	a

Item	Qty -247	Qty -247B	Part Number	Description
1	х		D212-664-247	CROSSTUBE ASSEMBLY (205/212 LOW AFT)
2		Х	D212-664-247B	CROSSTUBE ASSEMBLY (214 LOW AFT)
3	1	1	D6008-132	CROSSTUBE
4	2	2	D2940-1	SUPPORT
5	4	4	D3595-063-530	RUBBER CUSHION
6	2	2	D3660-1	CUFF
7	4	4	MS21920-28	CLAMP (OR MS21920-30)
8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
10	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

#### GENERAL NOTES:

MATERIAL: MANUFACTURED FROM D6008-132
 FINISHED LENGTH = 128.268±0.020 (BEFORE BENDING/TRIMMING)
 FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005.4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.

UNITS: INCHES UNLESS OTHERWISE NOTED.

BREAK SHARP EDGES : 0.005 TO 0.010 MAX.
IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF

USING VIBRATING STYLUS.

7) WEIGHT: D212-664-247 = 36.6 lbs (PER IIN-D212-664) D212-664-247B = 36.6 lbs (PER IIN-D212-664)

PART IS SYMMETRIC ABOUT CENTERLINE.

WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.

10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.

11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER OSI 038.
12) INSTALL D2940-1 SUPPORT USING 0.03° TO 0.06° THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

 13) INSTALL MS2 1920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE

15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS

15) TORQUE CLAWFS 60 TO TOU IN-LB. ENSURE AT LEGGT 1.3 THIS GOOD TO THE TORON ON THE TORON OF THE TORON ON THE TORON OF TH SEAL EDGE OF CUFF TO ENSURE NO GAPS.

17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

SHOP CONV RETURNS ENGINE UNCONTR-SUBJECT TO THE START

WITHOUT SCIENT

NO\_89383 MLJ

12/08/29

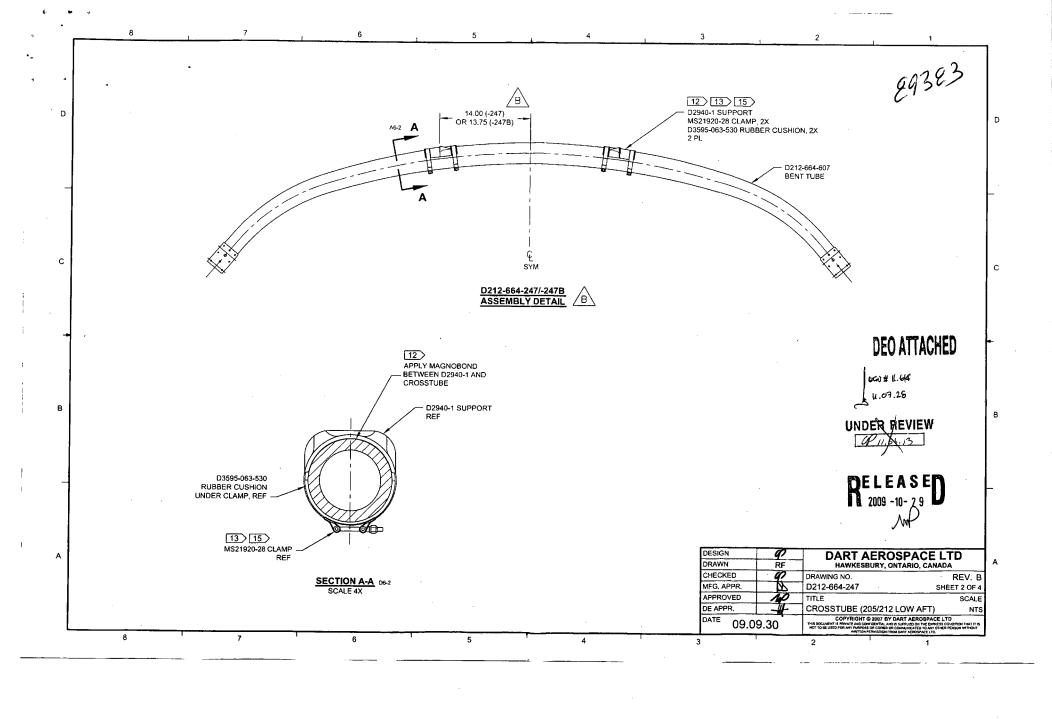
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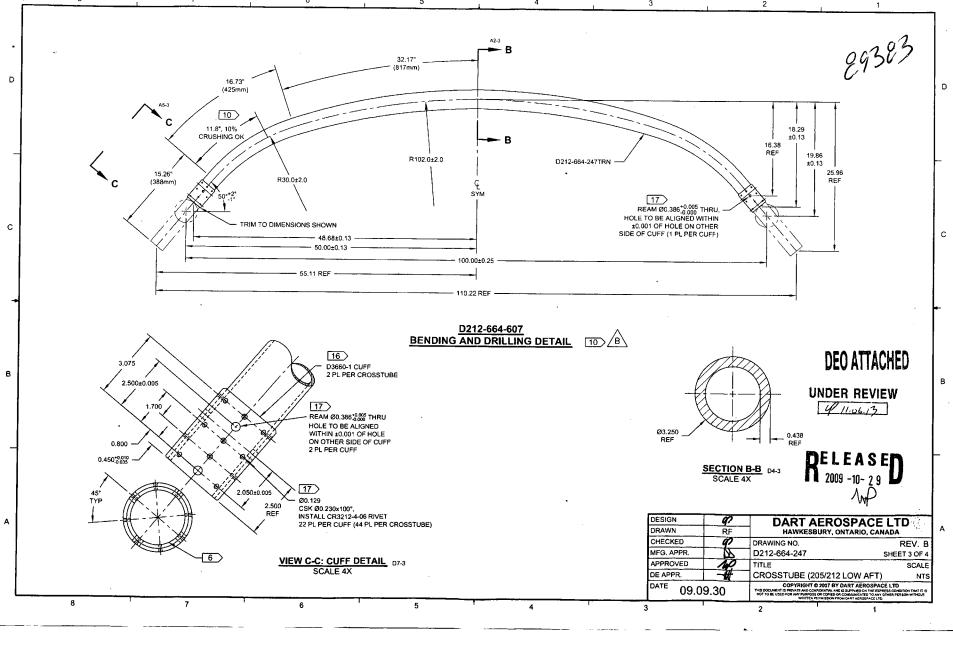
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В		E GENERAL N ENT STANDAR	RF	09.09.30	
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REV.			BY	DATE	
DESIGN		97	DART AEROSP	ACE	LTD
DRAWN	DRAWN RF		HAWKESBURY, ONTARIO, CANADA		
CHECK	ED	qo	DRAWING NO.		REV. B
MFG. AF	PPR.	77	D212-664-247	5	SHEET 1 OF 4
APPRO	VED	140	TITLE		SCALE
DE APPR.		-#-	CROSSTUBE (205/212 LOW AFT) NT		NTS
DATE 09.09.30			COPYRIGHT © 2007 BY DART AI THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED NOT TO BE USED FOR ANY PURPOSE OR COMEDIA. WRITTEN PERMISSION FROM DART AFF	ON THE EXPRE	SS COMOTION THAT IT IS

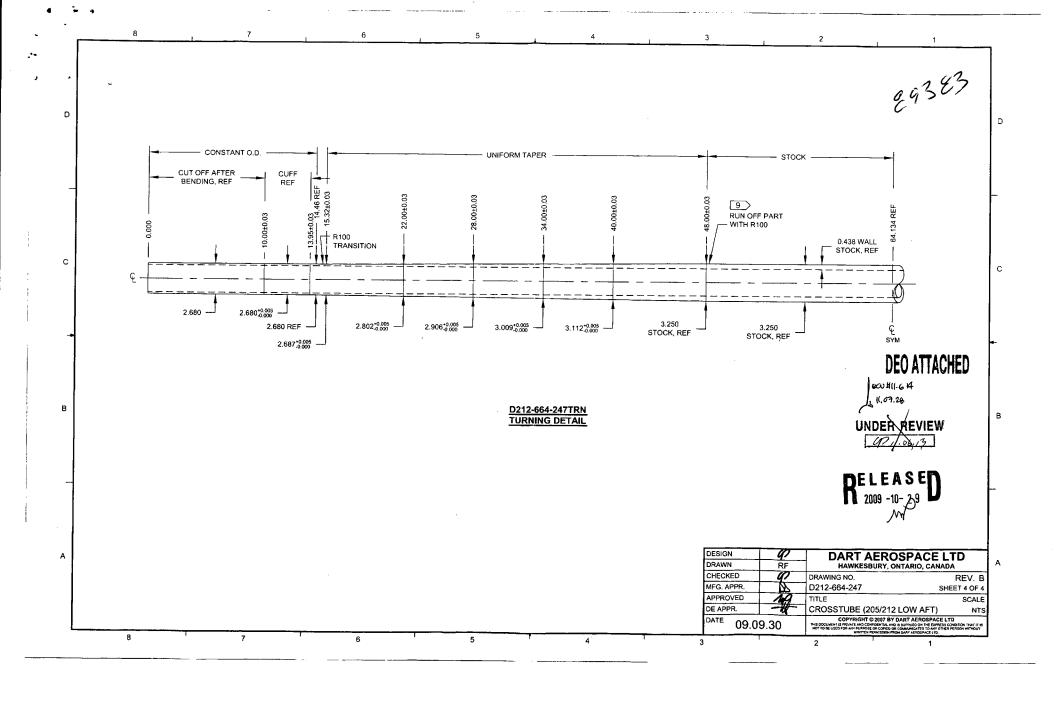
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	CROSSTUBE	E ASS'Y (20	LOW AFT)	ENGINE	ERING ORDER	D212-66	4-247-B-1	SHE	ET 1 OF 1	NTS
DRAWN 9	2	CHECKED	4>5	MFG. APPR.	#	APPROVED	SWD	DE APPI		
DATE 11.07	7.15	DATE //,	27.70	DATE	11.07.21	DATE	11/07/21	DATE	11.07.21	<del></del>
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PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

#### **CHANGE:**

IS:

ltem	Qty -247	Qty -247B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

#### WAS:

			,	
9	A/R	A/R		ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

#### IS:

- 12) TO INSTALL D2940-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

#### WAS:

- 12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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### LIQUID PENETRANT TEST REPORT

P- 10162

ACUREN	LIQUID FENE	INAMI IESI KEI	PORT	
•	\		/ PAGE	/ OF .
CLIENT	VART AFROSPACE	DATE SEPT	-/27/2-12	AM PM D
ATTENTION	INDA ICHANTACE	ACUREN JOB NO.	8-17-1019	7/
ADDRESS	1270 ABERDEEN ST.	PO/WO No.		
	HAWKES BURY, ON	WORK LOCATION AS	ADDRESS	
		ACCEPTANCE STD. ASTM 14	17 & DET 03801 REV./DAT	E
PROJECT	PT-WET FLUORESCENT Lido	IDRENETRANT INSPEC		
TEM(S) EXAMINED				
	Sez Below			
JOB DESCRIPT	PROCEDURE No. LTOR REV./DATE		No. LT- REV./DAT	E 2007
PART NO.		MATERIAL MALATINOSE		NIT
		of of THE EXIET	RHAC SURFACE C	in ITOMS
	ENTIONNED BECOM			
VIETHOD	FLUORESCENT	WATER WASH	☐ SOLVENT REMOVABLE	☐ Post Emulsified
FAMILY BRAND	MAGNAFL		OUTPUT > 1000 μ W/cm <sup>2</sup>	
PENETRANT PENG	MINIMUM DWELL TIME 10 MIN  DVER 1/13 O MINIMUM DRY TIME >10 MIN		HT 🗆 TROUBLELIGHT 🚨 OUTP	UT>100 fc @ SURFACE
PENETRANT REMO	DVER 1430 MINIMUM DRY TIME >10 MIN SKD - S MINIMUM DWELL TIME 10 MIN.		866 CAL DUE	DATE OT SSISOLD
DEVELOPER TYPE	Non Aqueous 🗆 Aqueous 🗀 Dry			
TEST SURFACE				
SURFACE CONDITION SURFACE TEMPER	ION ☐ AS GROUND ☐ AS WELDED  ATURE ☐ < - 4°C/ 20°F ☐ - 4°C/ 20°F TO 10°C/50	☐ MACHINED ☐ SHOT		LEAN BARE METAL 52°C/125°F
RESULTS-	( Metric Imperial)		001 1002 0/1201	02 0/120 1
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2	89254	TREW TO	Dava - 664	
3,	89268	ITEM TO	1212-664	
4	89269	17FM 7DX	DO12-664-	والكافور والمسيري الأطاء والمكاركي والمميح فالكاف فالمحاوج والاجتماد
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Scope of Services	T'ON			and the second second
The agreement of Acuren	Group Inc. to perform services extends only to those services provided feel writing. Uniments and expressions of pointon reflect the opinions or observations of Activen Group Inc.			
epresentations or warra	nties. Acuren Group Inc. is not assuming any responsibilities of the assumedeperator and the provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s hebility in respect o	ne owner/operator retains complete responsibil	lity for the engineering, manufacture, repair of	
Standard of Care	s provided, Acuren Group Inc. uses the degree, care and skill ordinards exercised under si			other warranty, expressed or
	ded by Acuren Group Inc.	englikilik yaken i khamerana e mana i jeli isani mili bidi bi		
SIGNATURES	K I CL MA	18 T 11 -		
CLIENT REPRESE	ENTATIVE Andy Sheldon PRINT	SIGNATURE	DTR# £ 85	5062
TECHNICIAN (SIGN	NATURE):	*	REPORT REVIEWED BY:	
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	CGSB LEVEL SNT LEVEL CGSB L	2 <sup>ND</sup> TECHNICIAN EVEL SNT LEVEL	_	
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AN6-40A	Bolt	1/1/2008	4.0.	Ea		255	0 %	0.0000	.2)	10	0 MRP				10/1	12/5
AN6-41A	Bolt	1/1/2008	2.0.	Ea	7/	255	0 %	0.0000	.2)	11	0 MRP	. :			9/20/	12/5.
AN960JD616	Washer	1/1/2008	18.	Ea	7/	255	0 %	0.0000		9	0 MRP		: :	: :	9/20/	12/5.
CR3212-4-06	CHERRY RIVET	1/1/2008	44	Ea	7/	220	0 %	0.0000	<u>.</u> a)	3	0 MRP				9/20/	12/5.
D212-664-207TRN	Crosstube Turning	. 1/1/2008	1.0	Ea	12	110	0 %	0.0000	ā	1	0 MRP	1			9/20/	12/5.
D2940-1	Support	12/5/2009	2.0	Ea	7/	240	0 %	0.0000	<u>a</u>	5	0 MRP				9/20/	12/5.
D3428-1	Placard	12/5/2009	1.0.	Ea	7/	255	0 %	0.0000	<u>.</u>	7	0 MRP				9/20/	12/5.
D3595-063-530	RUBBER CUSHION	12/5/2009	4.0.	Ea	7/	240	0 %	0.0000	ali	4	0 MRP				9/20/	12/5.
D3660-1	CUFF	12/5/2009	2.0.	Ea	7/	140	0 %	0.0000	aj l	2	0 MRP	,,			9/20/	12/5.
MS21042L6	Nut	1/1/2008	6.0.	Ea	7/	255	0 %	0.0000	ďĬ	8	0 MRP			:	9/20/	12/5.
MS21920-28	Clamp(per MIL-D	1/1/2008	4.0.	Ea	7/	240	0 %	0.0000	2)	6	0 MRP	: :			9/20/	12/5.